Renewable energy

The resources which are available in the earth in unlimited supply for instance sunlight, air, water, land etc are known as renewable resources. These contribute equally to the benefits of human beings and the environment.

Types of renewable energy

Stars are composed of spherical plasma that is held together tightly by gravitational force. The Sun is a type of star as well. The Sun is the star that is closest to Earth. During the night, millions of small stars can be seen with the naked eye.

Solar energy

It is derived from the Sun's energy. Solar energy is captured and used to generate heat or electricity via panels or mirrors. Photovoltaic (PV) cells It is derived from the Sun's energy. Solar energy is captured and used to generate heat or electricity via panels or mirrors. Solar cells directly convert sunlight into electricity. This heat absorption panel is used by solar thermal collectors to generate electricity.

Wind energy

Wind energy can be used to get mechanical power to electric generators with turbans, allowing them to function as pumping systems. It is made up of a rotor that is linked to a generator. Wind energy is used to generate electricity. A windmill is a structure with blades that convert wind energy into rotational energy. It generates electricity using renewable resources.

Geothermal energy

It is energy derived from thermal energy stored in the earth. Volcanoes and hot beverages used to capture this energy and then transformed or used by industries for water heating and other tenacities.

Hydropower

Hydropower is the energy produced by the use of water. It is created by utilising tides, which is recognised as tidal energy. Ocean surface vibrations are also used to generate electricity, which is known as wave energy.

Bio-energy

It is created from biomass, which is animal and plant waste. This biomass contains chemical energy and, when burned, provides bio-energy. The heat produced is being used to generate electricity and power generators.

Non-renewable resources

The formation of all fossil fuels is very similar. Earth's geography was very different hundreds of millions of years ago, even before the appearance of the dinosaurs. A large portion of the planet was covered by broad, shallow seas and swamps.

These ancient wetlands were home to plants, algae, and plankton. Photo synthetically, they took in the sun's rays and converted them into energy. Upon their death, the organisms sank to the bottom of the ocean or lake. When plants and animals died, their stored energy was released.

It took a long time for the dead plants to sink to the seafloor. As more rocks and sediment were deposited on top, the pressure and heat in the earth increased. Fossil fuels were created from plant and animal remnants in this environment (coal, natural gas, and petroleum). A large number of non-renewable energy sources can be found in large subsurface pockets (known as reservoirs).

Types and examples of non-renewable resources

Fossil fuel

Fossil fuels are achieved by the dead remains of plants and animals. Examples: natural gas, Coal, Oil, etc.

Nuclear fuel

Uranium is a very general example of nuclear fuel. Nuclear power delivers 6 % of total energy and 13-14 % of world electricity.

Advantages of Non-renewable resources

1. Non-renewable resources are affordable, for example, diesel and oil.
2. Easily accessible and compatible.
3. It is easy to store.

Disadvantages of non-renewable resources

1. When the energy is all used up it cannot be replaced again.
2. It escalates greenhouse gases.

Examples

The non-renewable energy resources are as follows:

- Coal
- Nuclear
- Oil
- Natural gases

Energy Polices Development

Energy policy development is the process of creating guidelines and regulations to manage the production, distribution, and consumption of energy. The goal of energy policy is to ensure that energy is used in a sustainable, affordable, and secure way.

Energy policy development process

- **Identify goals**: The policy should address issues like energy security, affordability, and efficiency. It should also consider the impact on the environment and social well-being.
- **Set objectives**: The policy should include targets for energy production, distribution, and consumption.
- **Develop models**: Energy models help to understand the policy questions and scenarios.
- **Create legislation**: The policy may include laws, regulations, incentives, and subsidies.

- **Consider international treaties**: The policy may include agreements with other countries.

Examples of energy policies

- **India's energy policy**: Focuses on increasing locally produced energy, reducing energy poverty, and developing alternative energy sources
- **The Sugarcane Ethanol Program**: A program to study the conversion of sugarcane into ethanol
- **The USDA grants program**: A program to support small bio-based businesses and encourage bio-economy development